

**Variations in Jupiter's Radiation Belts and Synchrotrons
Radiation as a Result of the Impacts of Comet
Shoemaker-Levy/9.**

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The impact of comet SL9 with Jupiter induced a number of variations in Jupiter's synchrotrons radiation; including a 20-30% increase in emission intensity, a hardening of the spectrum, and significant distortions in the beaming curve including a post impact flattening. We report on the observed changes in the synchrotrons radiation and consider the consequences of three potential mechanisms for inducing such effects; namely electron acceleration, radial diffusion and pitch-angle scattering. While none of the processes can be ruled out as insignificant, we show that pitch-angle scattering is consistent with all of the available radio frequency data and demonstrate that this could be due to realistic enhanced amplitudes of cyclotron resonant whistler mode waves associated with the comet impacts. We suggest that the waves could be a result of electrical storm activity or excited by natural instabilities of the electron distribution in Jupiter's radiation belts.

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5. GA 2,09/3.08

6.

7. none

8. No